

## Key to genera of Afrotropical Sciomyzidae (Diptera: Acalyptratae) with new records, synonymies and biological notes

by

R. M. Miller

(Department of Zoology & Entomology, University of Natal,  
P. Bag X01, Scottsville 3209, South Africa)

### SYNOPSIS

An identification key to 12 genera, currently known from the Afrotropical (subsaharan) Region, is presented. This includes 3 recently recorded genera: *Ditaeniella* Sack (Miller 1991), *Hydromya* Robineau-Desvoidy and *Pteromicra* Lioy (Miller 1993 1994). The subgenus *Graphomyzina* Macquart of *Pherbellia* Robineau-Desvoidy s. lat. is given generic status. New synonymies are given for *Ethiolimnia capensis* (Schiner 1868) (= *E. geniculata* (Loew 1862)) and *Sepedon jonesi* Barraclough, 1985 (= *S. scapularis* Adams, 1903).

New collection records are given for *Salpicella stuckenbergi* Verbeke, and these flies are reported as scavenging on large agate snails (?*Archachatina* sp.). Rearings in progress with *Ditaeniella* sp. indicate a larval preference for the indigenous *Bulinus ?tropicus* (Krauss); they differ from *Sepedon* in being less voracious as mature larvae and the first instars preferring to scavenge on dead and dying snails. Unidentified sciomyzid puparia found in the shells of the invasive Grey Snail, *Theba pisana* (Müller), first reported by Miller (1993 1994), probably belong to *Ethiolimnia* species. These are the first records of parasitoid sciomyzids feeding on terrestrial snails in the Afrotropical Region.

### INTRODUCTION

Sciomyzidae (snail-killing or marsh flies) are generally medium to large acalyptrate flies, usually yellowish or brownish, often with spotted or patterned wings. A characteristic bristle, or prominent seta, is usually present near the middle of the anterior face of the mid femur. With their key to Diptera families, Barraclough & Londt (1985) cited taxonomic literature and provided brief information on sciomyzid adult and larval behaviour and ecology in southern Africa. Berg & Knutson (1978) have extensively reviewed the biology and systematics of the Sciomyzidae worldwide. Most adult Sciomyzidae tend to stay in the breeding sites of their larvae, where they usually rest on emergent or hygrophilous vegetation, with heads downward (Berg & Knutson 1978). Adult sciomyzids appear to be most abundant during periods of a month or two following annual rainy seasons, especially in arid and semi-arid regions. The larvae are mainly predators or internal parasitoids of freshwater or terrestrial, non-operculate snails, but a few feed on slugs, small sphaeriid clams, or eggs of snails (Knutson 1980).

Since Knutson's (1968) key to nine Ethiopian (Afrotropical) genera, and his subsequent recognition of four subgenera in the 1980 *Catalogue of the Diptera of the Afrotropical Region*, three more genera (*Ditaeniella*, *Hydromya* and *Pteromicra*) have been recorded, with species collected from southern Africa, Ethiopia and Nigeria respectively. With the resurrection of *Ditaeniella* from the large genus *Pherbellia* (Rozkošný 1987), the only other described Afrotropical species of

*Pherbellia* have been assigned to the subgenus *Graphomyzina* (Knutson 1980), which I have given generic status as originally did Verbeke (1950). *Ethiolimnia*, *Sepedonella*, *Sepedoninus*, *Tetanoptera* and *Verbekaria* are restricted to the Afrotropical Region. *Sepedon*, which is the largest genus in Africa, containing two-thirds of all described species, has been divided into three subgenera: *Mesosepedon*, *Parasepedon* and *Sepedomyia* (Knutson 1980).

Of the several laboratory-reared Afrotropical *Sepedon* species, larvae of *S. scapularis* Adams have been shown experimentally to be efficient aquatic predators on the tested prey: *Bulinus africanus* (Krauss), an important intermediate host of *Schistosoma haematobium* (Bilharz); *B. tropicus* (Krauss); and the invasive species *Physa acuta* Draparnaud (Maharaj *et al.* 1992). Rearings of other species are being undertaken to assess their value in the augmentation of biocontrol programmes. However, much basic taxonomic work is needed on tropical Sciomyzidae before rearings and biological studies of reliably identified species can be made in order to assess their role in controlling snail-borne diseases (Berg & Knutson 1978).

The main areas of distribution of Sciomyzidae are in the Holarctic Region, the combined southern faunas being only about half as speciose. Whereas there are many endemic genera in the Neotropical Region, the Afrotropical fauna is dominated by the cosmopolitan *Sepedon* (Knutson 1980). *Salticella*, *Colobaea*, *Pteromica*, *Graphomyzina*, *Ditaeniella*, *Hydromya* and *Sepedon* have representatives in the Palearctic Region and most of these genera have species recorded from North Africa. Other Palearctic genera with species recorded from North Africa and which are likely to have species occurring in the Afrotropical Region include:

- Pherbellia* Robineau-Desvoidy, 1830 s. str. – 5 spp. (Canary Islands, Madeira, Morocco, Algeria, Tunisia)
- Dichaetophora* Rondani, 1868 – 1 sp. (Morocco)
- Elgiva* Meigen, 1838 – 2 spp. (Algeria)
- Euthycera* Latreille, 1829 – 6 spp. (Canary Islands, Morocco, Algeria, Tunisia)
- Ilione* Haliday, 1837 [= *Knutsonia* Verbeke, 1964] – 3 spp. (Morocco, Algeria, Tunisia)
- Oligolimnia* Mayer, 1953 – 1 sp. (Morocco)
- Pherbina* Robineau-Desvoidy, 1830 – 1 sp. (Morocco)
- Psacadina* Enderlein, 1939 – 1 sp. (Morocco)
- Trypetoptera* Hendel, 1900 – 1 sp. (Morocco)

#### METHODS AND MATERIALS

For the subsequent discussion on Afrotropical genera, I have followed the conventional subdivisions of Sciomyzidae into the primitive Salticellinae (two recent species) and the Sciomyzinae (primarily a cool-adapted group, most species having undergone considerable modification) (Berg & Knutson 1978). Steyskal's (1965) tribal division of Sciomyzinae into Sciomyzini and Tetanocerini is retained. However, the principle character traditionally used to separate Sciomyzini and Tetanocerini (presence or absence of propleural bristle) is not reliable (Berg & Knutson 1978).

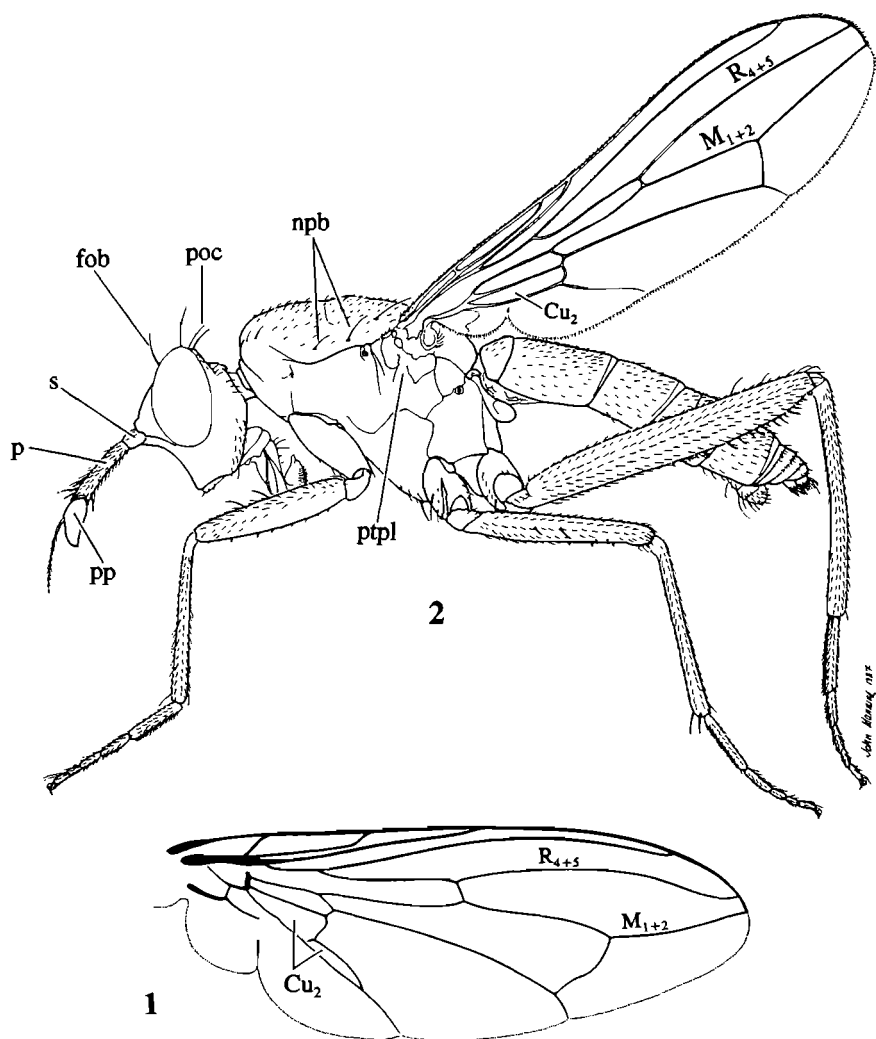
Most sciomyzid material examined is housed in the Diptera collection of the Natal

Museum and my material is temporarily at the University of Natal, Pietermaritzburg, until its deposition at the Museum. During several overseas trips, a number of types and identified species have been examined at some of the American and European museums. Other material has been borrowed from various institutions and these specimens with their collection data are being recorded for generic revisions in progress. [Additional Afrotropical sciomyzids or related groups, identified or unsorted would be gratefully received.]

## KEY TO GENERA OF AFROTROPICAL SCIOMYZIDAE

[Modified after Verbeke (1950), Knutson (1968), Rozkošný (1987). Genera in bold are new Afrotropical records since the publication of the Afrotropical Diptera catalogue (Knutson 1980).]

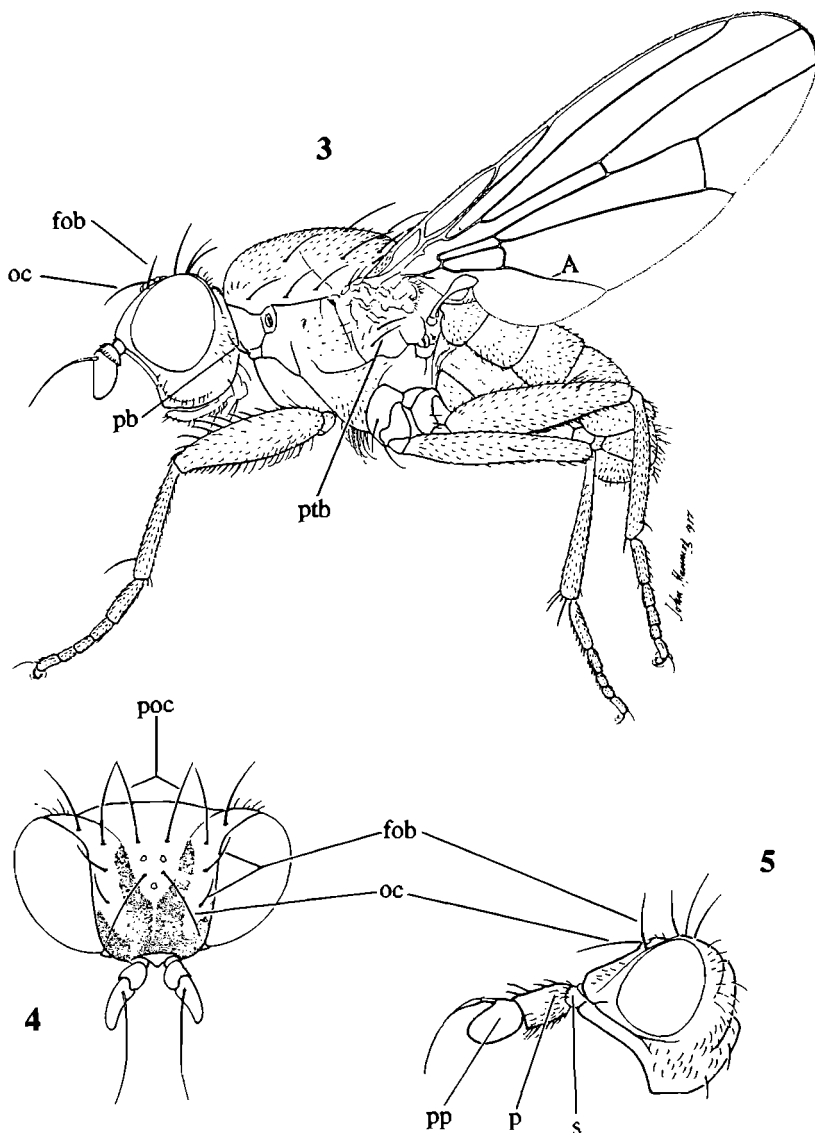
- 1 Veins  $R_{4+5}$  and  $M_{1+2}$  strongly converging at wing apex, anal cell ( $Cu_2$ ) with triangular extension at anal vein (Fig. 1) [Salticellinae] ..... *Salticella*
- Veins  $R_{4+5}$  and  $M_{1+2}$  parallel or only slightly converging, anal cell ( $Cu_2$ ) without triangular extension apically (Fig. 2) [Sciomyzinae] ..... 2
- 2 Propleural bristle (pb) distinct, usually strong (Fig. 3), may be small or weak; male with 2 pairs of surstyli [Sciomyzini] ..... 3
- Propleuron without strong bristles above base of coxa, only fine setae at most; male with 1 pair of surstyli [Tetanocerini] ..... 6
- 3 Anal vein not reaching posterior margin of wing; arista with several dorsobasal hairs black, bristle-like, and much stronger than others; frons mostly pruinose ..... *Colobaea*
- Anal vein (A) reaching posterior margin of wing (Fig. 3); arista without large dorsobasal hairs ..... 4
- 4 Anal vein reaching margin as a fold; gena narrow; frons entirely shining ..... *Pteromicra*
- Anal vein distinctly reaching margin of wing; gena broad; frons mostly pruinose [*Pherbellia* s. lat.] ..... 5
- 5 2 pairs fronto-orbital bristles (fob) (Fig. 4); 1 pteropleural bristle; inner posterior margin of hind coxa bare; wings patterned ..... *Graphomyzina*
- 1 pair (posterior) fronto-orbital bristles (fob); 2 pteropleural bristles (ptb) (Fig. 3); posterior margin of hind coxa with fine setae (haired); wings unpatterned (hyaline) ..... *Ditaeniella*
- 6 Scutellar bristles 4; lunule inconspicuous; 2nd antennal segment (p) equal or subequal to 3rd antennal segment (pp) (Fig. 5) ..... 7
- Scutellar bristles 2; lunule well exposed; 2nd antennal segment (p) at least 1.5 times as long as 3rd segment (pp) and usually longer (Fig. 2) [*Sepedon* group] ... 8
- 7 1 pair (posterior) fronto-orbital bristles (fob) (Fig. 5); wings variously patterned with spots, bands or reticulated ..... *Ethiolimnia*
- 2 pairs fronto-orbital bristles; wings with brown costal border and 5–7 small brown spots ..... *Hydromya*
- 8 Ocellar bristles (oc) well developed (Fig. 5); wings brownish with white transparent spots ..... *Verbekaria*



Figs 1–2. Characters of Afrotropical sciomyzid genera. 1. *Salticella stuckenbergi* Verbeke, wing. 2. *Sepedon testacea* Loew, habitus of adult, female. [(pp) postpedicel = 3rd antennal segment, (p) pedicel = 2nd antennal segment, (s) scape = 1st antennal segment, (fob) = fronto-orbital bristle, (poc) = postocellar bristle, (npb) = notopleural bristle, (ptpl) = pteropleuron, ( $R_{4+5}$ ) = 3rd vein, ( $M_{1+2}$ ) = 4th vein, ( $Cu_2$ ) = anal cell.]

- Ocellar bristles small and weak at most, usually lacking (Fig. 2); wings without conspicuous patterning.....9
- 9 Postocellar bristles absent .....10
- Postocellar bristles (poc) well developed (Fig. 2).....11
- 10 Notopleural bristles (npb) 2; pteropleuron (ptpl) bare (Fig. 2) .....*Tetanoptera*
- Notopleural bristles 1; pteropleuron with a few minute setae (hairs)....*Sepedonella*
- 11 Fronto-orbital bristles 2, anterior proclinate, posterior reclinate, both sometimes

- greatly reduced; lunule very large, inflated .....*Sepedoninus*
- Only posterior fronto-orbital bristles present (Fig. 2), sometimes with weak reclinate anterior fronto-orbital [*Sepedon s. lat.*] .....12
- 12 1st antennal segment elongate, at least two-thirds length of 3rd segment; front perpendicular or strongly oblique; humeral bristle weak ....*Sepedon* (*Sepedomysia*)



Figs 3–5. Characters of Afrotropical sciomyzid genera. 3. *Ditaeniella* sp., habitus of adult, male. 4. *Graphomyzina costata* Verbeke, head, dorsal view. 5. *Ethiolimnia geniculata* (Loew), head, lateral view. [(pp) postpedicel = 3rd antennal segment, (p) pedicel = 2nd antennal segment, (s) scape = 1st antennal segment, (oc) = ocellar bristle, (fob) = fronto-orbital bristle, (poc) = postocellar bristle, (pb) = propleural bristle, (ptb) = pteropleural bristle, (A) = anal vein.]

- 1st antennal segment (s) short, at most half length of 3rd segment (pp); front slightly oblique; humeral bristle at most weak, usually absent (Fig. 2).....13
- 13 Anterior notopleural bristle (npb) sometimes present (Fig. 2); usually at most a weak presutural bristle (in line with supra-alar); aedeagus usually with spiral filament; cochleate vesicle usually present.....*Sepedon* (*Parasepedon*)
- Anterior notopleural bristle absent; strong presutural bristle (in line with supra-alar); aedeagus without spiral filament; cochleate vesicle absent.....  
*Sepedon* (*Mesosepedon*)

#### REVIEW OF AFROTROPICAL GENERA

[Taxonomic literature citations to older genus and species records are available in the Afrotropical Diptera catalogue (Knutson 1980), Palaearctic Diptera catalogue (Rozkošný & Elberg 1984) and review of Palaearctic Sciomyzidae (Rozkošný 1987).]

#### Salticellinae

*Salticella* and the fossil *Prosalticella* Hennig, 1965, have been considered primitive members of the Sciomyzidae, with *Salticella* being most closely related to the Sciomyzini (Knutson *et al.* 1970).

#### *Salticella* Robineau-Desvoidy, 1830

*Salticella* has one of the most widely disjunct geographical distributions among living Sciomyzidae, *S. fasciata* (Meigen, 1830) occurring in the southwestern Palaearctic and *S. stuckenbergi* Verbeke (1962b) described from Lesotho (Knutson *et al.* 1970). These large (9.5–13.0 mm), brown flies were collected in Lesotho during November 1954, by C. Jacot-Guillarmod.

New Collection Records: 1 ♂ 1 ♀ / Hott.[entots] Holl.[andberge] / East side, 4000 ft. / K. H. Barnard / Jan. 1933 / [CAPE]; 1 ♀ / Cape Peninsula / June 29, 1971 / [CAPE] [all in South African Museum, Cape Town, South Africa]. These records extend the distribution of this species to the southwestern Cape. Distribution of the submediterranean fly, *S. fasciata*, extends into North Africa (Algeria, Tunisia and Egypt).

Biology: The type-series were found scavenging on large agate snails, ?*Archachatina* sp. (Achatinidae) (Stuckenberg; Kilburn *pers. comm.*) and in the Cape they may be opportunistic predators or scavengers on other large terrestrial snails. Rearings of *S. stuckenbergi* are needed to clarify its systematic position and compare its life history stages with the well known nominate type-species, *S. fasciata* Meigen, which kills and eats or feeds saprophagously on terrestrial snails of Helicidae (Knutson *et al.* 1970).

#### Sciomyzinae

##### Sciomyzini

Species predominantly represented in the Holarctic Region; most known larvae are scavengers and parasitoids.

*Colobaea* Zetterstedt, 1837

This genus consists primarily of small (2–4 mm), black and yellow flies, mostly occurring in the Nearctic (3 spp.) and Palaearctic (7 spp.) Regions (Knutson *et al.* 1990b). Knutson (1968) first reported a new species collected by J. C. Deeming during February in northern Nigeria; this series is being described by Knutson & Deeming (ms.) along with a specimen collected from Niger. Additionally, I have seen a specimen from The Gambia. One species, *C. pectoralis* (Zetterstedt), has been recorded from Egypt.

Biology: Found in freshwater habitats where there are various small species of non-operculate snails (Knutson *et al.* 1990b).

*Pteromicra* Lioy, 1864

This genus presently contains 17 small (2.5–4.0 mm) species with dark brown to black and yellow ground colour, some with a Holarctic distribution (Rozkošný 1987). Knutson & Deeming (ms.) are describing a new species from Nigeria, which is a new record for *Pteromicra* in the Afrotropical Region. Interestingly, none of the 6 described Palaearctic species has been recorded from North Africa.

Biology: As with *Colobaea*, *Pteromicra* is an Holarctic genus with semi-aquatic and terrestrial snail-killing larvae (Knutson & Deeming ms.).

*Pherbellia* Robineau-Desvoidy, 1830 *s. lat.*

This is the largest genus (*ca.* 125 valid spp.) in the family and occurs mostly throughout the Holarctic Region, but is known from all major zoogeographical regions (Knutson *et al.* 1990a). These small to medium-sized (2–6 mm) flies have larval feeding habits that range from general predators of exposed aquatic snails to highly specialised, host-specific parasitoids of terrestrial, pulmonate snails belonging to many families (Bratt *et al.* 1969).

*Pherbellia* is a diverse group and has been separated into a number of genera, but the classification remains unresolved (Knutson *et al.* 1990a). In subsaharan Africa only two groups of *Pherbellia* have been found. Firstly, *Graphomyzina*, which is considered a junior synonym of *Pherbellia* by most authors or a subgenus of *Pherbellia* by others (Knutson *et al.* 1990a). Following the trend to split this large genus and for conformity and convenience in the Afrotropical key, I have dealt with *Graphomyzina* as a separate genus. I hereby give it new status (type, *Sciomyza limbata* Meigen, 1830). Secondly, *Ditaeniella*, formerly considered a subgenus, was recently elevated to a valid genus (type, *Sciomyza grisescens* Meigen, 1830) (Rozkošný 1987).

Other species of *Pherbellia* have been recorded from the Canary Islands (*P. argyrotarsis* (Becker)) and Madeira (*P. inclusa* (Wollaston)), and 3 very widespread species throughout North Africa (*P. cinerella* (Fallén), *P. griseola* (Fallén) and *P. nana* (Fallén)), which have not entered the Afrotropical Region.

*Graphomyzina* Macquart, 1835 **stat. n.**

This group of mostly medium-sized (2.5–5.0 mm), dark brown flies are generally characterised by a highly dense pattern of wing spots and one pteropleural bristle.

Other major characters of *Graphomyzina* are midfrontal stripe absent, pruinosity of ocellar triangle not extending beyond middle of frons, 2 pairs fronto-orbital bristles, mesopleuron bare and hind coxa without bristles on dorso-medial margin (Knutson *et al.* 1990a).

In his revision of this group (Miller in prep.), there is one new species from Tanzania, which can be added to the three species (*G. cingulata*, *G. costata*, *G. kivuana*) described by Verbeke (1950) from Rwanda and Zaïre. Collection records for all are from several central African countries, except that *G. costata* is widespread and throughout southern Africa.

Biology: Unknown in Afrotropical Region. *G. trabeculata* (Loew), from the Nearctic Region (Knutson *et al.* 1990a), kills and feeds on several species of hygrophilous and terrestrial snails (Bratt *et al.* 1969).

#### *Ditaeniella* Sack, 1939

These medium-sized (3–6 mm), light brown, clear-winged flies have only the posterior fronto-orbital bristle; midfrontal stripe present; distinct setae (hairs) on the mesopleuron and inner posterior margin of hind coxa (Rozkošný 1987). *D. grisescens* has a very wide distribution in the Palaearctic Region and extends into Egypt and the Oriental Region. Presently 3 species can be referred to this genus: *D. parallela* (Walker) – Nearctic and Neotropical; *D. patagonensis* (Macquart) – Neotropical; *D. trivittata* (Cresson) – Nearctic (Knutson *et al.* 1990b).

Miller (1991) first reported this genus throughout southern Africa (Namibia, Botswana, South Africa). A taxonomic study is nearing completion to establish the species' identities and relationships to the similar looking *D. grisescens* (Miller in prep.).

Biology: Rearing is in progress with adults swept from the grasses surrounding a small temporary pool and impoundment in the southern Karoo, eastern Cape, in April, 1995. *Bulinus ?ropicus* (Planorbidae) were the only snails found, mostly under flat stones, in a temporary pool below the dam wall. Larvae of Nearctic and Palaearctic species of *Ditaeniella* have been reported to have killed and eaten a wide variety of aquatic and terrestrial snails in the laboratory (Bratt *et al.* 1969).

#### Tetanocerini

Dominant group represented in the Afrotropical Region; known larvae mostly aquatic and semiaquatic predators.

#### *Hydromya* Robineau-Desvoidy, 1830

These yellowish brown medium-sized flies (5.5–7.0 mm) have antennae relatively short, 3rd segment rounded apically and posterior crossvein of wing strongly s-curved. The male sternum 4 has two anteriorly directed processes that are unique in the family (Rozkošný 1987). The only species, *Hydromya dorsalis* (Fabricius, 1775), is very widespread in the Palaearctic Region and has been recorded from Algeria, Tunisia and Israel (Knutson & Freidberg 1983).

New Record: 2 ♀, ETHIOPIE / Prov. Sidamo-Borana / MALGHE-WANDO farm / t.o. Awasa meer / 1960 / M. J. A. de Koster [Zoologisch Museum, Universiteit van



Amsterdam, The Netherlands]. These Ethiopian specimens agree with previously determined material and the keys and literature available.

Biology: Larvae have been found only in shallow, flowing water. They kill and feed upon aquatic, pulmonate snails, especially *Lymnaea* spp., and are also predatory on snail egg masses (Knutson & Berg 1963).

#### *Ethiolimnia* Verbeke, 1950

Species in this genus range from small (3 mm) to medium (6 mm) and have various kinds of wing patterning from highly reticulated to smoky, brownish markings with transparent spots or areas. The 2nd antennal segment is usually subequal to the 3rd (sometimes shorter or longer), but the 2nd segment is not as long as in the *Sepedon* group.

New Synonymy: *Limnia capensis* Schiner, 1868 = *Tetanocera geniculata* Loew, 1862. The type of *E. geniculata*, a male from the Cape of Good Hope (No. 9531), was examined at the Naturhistorisches Museum Wien [Vienna] and agrees with Loew's description and the specimens of *E. geniculata* determined by J. Verbeke, L. Knutson, and others, in the Natal Museum Diptera collection.

Verbeke (1962a) provided a key to six of the valid species: *E. brincki* Verbeke, *E. geniculata* (Loew), *E. lindneri* Verbeke, *E. platealea* Verbeke, *E. vanrosi* Verbeke, and *E. zumpti* Verbeke. The identity of the female type of *E. vittipennis* (Thomson) has not been confirmed. In addition, I have mostly single females of at least four undescribed species, all from the Cape (South Africa). Most species of *Ethiolimnia* appear to be found in South Africa, with the exception of *E. platealea*, which is recorded from Rwanda and Kenya. *E. geniculata* and *E. zumpti* are widespread throughout much of the Afrotropical Region.

Biology: Unknown. On 2 January 1993, at Hout Bay, on the western Cape coast, I discovered a few puparia while crushing numerous empty shells of the invasive Grey Snail, *Theba pisana* (Müller) (Helicidae) (Miller 1993 1994). These puparia differ from the described puparia of *Ditaeniella* and *Pherbellia* illustrated in Bratt *et al.* (1969) and the Afrotropical *Sepedon* in Knutson *et al.* (1967) and Barraclough (1983). The snails can be very numerous below and on succulent dune plants along the Cape coast, and concurrently *E. geniculata* is the dominant species collected on these dunes, e.g. Jeffreys Bay, November 1978 (*pers. obs.*); near Gansbaai, January 1983 (*pers. obs.*); and De Hoop Nature Reserve, October 1993 (Londt *pers. comm.*).

#### *Sepedon* group of genera

The following six genera can be conveniently placed in this group, considered a subfamily by Verbeke (1950) and Knutson (1968), although Steyskal (1973) discussed the classification and preferred to call it merely 'the *Sepedon* group'. Steyskal also presented a key to the six world genera of the group (below) which he recognised, but did not include *Verbekaria* and *Tetanoptera*:

Neotropical: *Thecomyia* Perty, 1933; *Sepedomerus* Steyskal, 1973; *Sepedonea* Steyskal, 1973

Afrotropical: *Sepedonella* Verbeke, 1950; *Sepedoninus* Verbeke, 1950

Cosmopolitan: *Sepedon* Latreille, 1804

These flies tend to be medium-sized to large (3.5–9.0 mm), have elongate antennae, bodies and legs, and lack conspicuous wing patterning, with the face extended below.

*Verbekaria* Knutson, 1968

Knutson (1968) placed the only species, known from a single male and female collected from Tanzania, in the Sepedoninae. However, *V. punctipennis* has well developed ocellars and the lower face produced, whereas the characteristics of the *Sepedon* group include ocellar bristles small and weak or lacking, and face more or less extended below (Steyskal 1973). Otherwise, these medium-sized flies (*ca.* 7 mm) with brownish wings and several large transparent spots conform to the *Sepedon* group, and subfamily grouping with lunule well exposed, scutellar bristles 2 and vallar (subalar) bristles absent. Detailed examination and more specimens are needed to clarify the position of this genus.

Biology: Unknown.

*Tetanoptera* Verbeke, 1950

Verbeke (1950) based this species and genus upon a single female from Zaïre. He placed *T. leucodactyla* Verbeke in Tetanocerinae rather than in Sepedoninae, but with the statement that it is intermediate between those two groups. From the description, and as Steyskal (1973) stated, it is most likely that when a male becomes available by association or further collecting, the genus will be found to be synonymous with *Sepedon*, particularly since *S. testacea* Loew has 2 notopleural bristles likewise. The absence of postocellars in the type must be checked very closely.

Biology: Unknown.

*Sepedonella* Verbeke, 1950

*Sepedonella* contains medium-sized species (3.5–5.0 mm) with postocellars absent and the mid femur with minute bristles or setae, none of which is distinctly larger than the others (Steyskal 1973). Presently, three described species are known only from Zaïre (*S. bredoi* Verbeke, *S. straeleni* Verbeke, *S. wittei* Verbeke) and one species (*S. nana* Verbeke) is widespread throughout the Afrotropical Region. Knutson & Deeming (ms.) are describing one new species from Nigeria.

Biology: Unknown.

*Sepedoninus* Verbeke, 1950

*Sepedoninus* comprises conspicuously large (8–9 mm) species, having 2 fronto-orbitals (anterior proclinate and posterior reclinate) but these sometimes greatly reduced (Steyskal 1973), and the lunule very large and inflated (Knutson 1968). Presently there are two described species (*S. curvisetis* Verbeke and *S. planifrons* Verbeke) from Zaïre and other central African countries. Verbeke (1950) provided a key to species, including *S. straeleni* Verbeke, which has been synonymised with *S. curvisetis* by Knutson (1980).

Biology: Unknown.

*Sepedon* Latreille, 1804

Species of this genus generally range in size from 5–9 mm, are black to pale orange, with 2nd antennal segment usually at least 1.5 times length of the 3rd, and wings usually hyaline or with dark infuscation apically. There are 40 valid Afrotropical species catalogued in 3 subgenera: *Mesosepedon* Verbeke (5 spp.), *Parasepedon* Verbeke (33 spp.) and *Sepedomyia* Verbeke (2 spp.) (Knutson 1980). To this number Barraclough (1985) described *S. (M.) tuckeri* Barraclough and *S. (M.) jonesi* from southern Africa and Vala *et al.* (1994) *S. (M.) knutsoni* from Bénin.

New Synonymy: After careful morphological comparison of the male and female syntypes of *Sepedon scapularis* Adams, 1903 [University of Kansas, Lawrence, USA] collected from Salisbury, South Africa (= Zimbabwe) by F. L. Snow, D. A. Barraclough and I concluded that *S. jonesi* Barraclough is another synonym.

*Sepedon* is widespread outside of the American tropics (Steyskal 1973). A number of new Afrotropical species await description and some to be synonymised (Knutson & Deeming ms.; Miller in prep.). It appears that Verbeke's (1950) and Knutson's (1980) subgeneric categories will have to be modified or may fall away, because several species do not possess both the cochleate vesicle and aedeagal spiral filament (Steyskal & Knutson 1975), yet appear to fall into *S. (Parasepedon)*. Verbeke (1950 1961) provided keys to species groups in an attempt to separate the species in this large subgenus. Barraclough (1985) and Vala *et al.* (1994) updated Verbeke's (1963) key to African *S. (Mesosepedon)* spp. There are a number of species that range widely from south to north in the Afrotropical Region, e.g. *S. ruficeps* Becker even extends into Egypt. Of the six fairly widely distributed Palearctic species, only *S. spegea* (Fabricius) has been found in North Africa (Morocco).

Biology: The known habits of *Sepedon* larvae show them to be aquatic predators of pulmonate snails of the families Lymnaeidae, Physidae and Planorbidae (Berg & Knutson 1978). Knutson *et al.* (1967) were the first to report and describe the immature stages of two Afrotropical species (*S. ruficeps* Becker and *S. scapularis* Adams) reared by Dr W. C. Frohne in Ethiopia. In 1983, Barraclough studied the malacophagous feeding behaviour of South African *Sepedon* and reared *S. neavei* Steyskal and *S. testacea* Loew. Later, Maharaj *et al.* (1992) conducted snail predation experiments with larvae of *S. scapularis*. Recently, Appleton *et al.* (1994) reviewed and evaluated the use of *Sepedon* in schistosomiasis control in South Africa, indicating that these larvae preferred more medically important indigenous snails (*Bulinus africanus* (Krauss) and *Biomphalaria pfeifferi* (Krauss)) than introduced snails (*Physa acuta* Draparnaud and *Stenophysa* cf. *marmorata* (Goulding)).

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